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QUALITÄTSSICHERUNG DURCH
AKKREDITIERUNG VON
STUDIENGÄNGEN E.V.

FINAL REPORT

UNIVERSITAS BRAWIJAYA

CLUSTER AGRICULTURAL TECHNOLOGY

FOOD SCIENCE AND TECHNOLOGY (B.SC.)

AGRICULTURAL PRODUCT TECHNOLOGY (M.SC.)

AGRICULTURAL ENGINEERING (M.SC.)

AGROINDUSTRIAL TECHNOLOGY (M.SC.)

AGROINDUSTRIAL TECHNOLOGY (PHD)

FOOD SCIENCE (PHD)

February 2023



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DECISION OF THE AQAS STANDING COMMISSION ON THE STUDY PROGRAMMES

- “FOOD SCIENCE AND TECHNOLOGY” (B.SC.)
- “AGRICULTURAL PRODUCT TECHNOLOGY” (M.SC.)
- “AGRICULTURAL ENGINEERING” (M.SC.)
- “AGROINDUSTRIAL TECHNOLOGY” (M.SC.)
- “AGROINDUSTRIAL TECHNOLOGY” (PHD)
- “FOOD SCIENCE” (PHD)

OFFERED BY UNIVERSITAS BRAWIJAYA, MALANG, INDONESIA

Based on the report of the expert panel, the comments by the university and the discussions of the AQAS Standing Commission in its 15th meeting on 15 December 2022, and the circulation procedure of 03 February 2023 the AQAS Standing Commission decides:

1. The study programmes “Food Science and Technology” (B.Sc.), “Agricultural Product Technology” (M.Sc.), “Agricultural Engineering” (M.Sc.), “Agroindustrial Technology” (M.Sc.), “Agroindustrial Technology” (PhD), and “Food Science” (PhD) offered by Universitas Brawijaya, Indonesia are accredited according to the AQAS Criteria for Programme Accreditation (Bachelor/Master) and the AQAS Criteria for Doctoral Programme Accreditation (PhD).

The accreditations are conditional.

The study programmes essentially comply with the requirements defined by the criteria and thus the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and the European Qualifications Framework (EQF) in their current version. The required adjustments can be implemented within a time period of twelve months.

2. The conditions have to be fulfilled. The fulfilment of the conditions has to be documented and reported to AQAS no later than **29 February 2024**. The confirmation of the conditions might include a physical site visit within the time period of twelve months.
3. The accreditation is given for the period of **six years** and is valid until **28 February 2029**.

Conditions:

All programmes

1. The conversion of the SCU to ECTS must be adjusted to reflect the actual workload.

Bachelor programme of Food Science and Technology (BFST)

1. The published course descriptions / descriptions of the curriculum must specify if a course / module is elective or compulsory as well as the type of examination used to assess the competencies.

Master's programme of Agricultural Product Technology (MAPT)

1. The published course descriptions / descriptions of the curriculum must specify if a course / module is elective or compulsory as well as the type of examination used to assess the competencies.
2. The denomination of the academic degree awarded in the programme must be adjusted in the documents issued to students in order to reflect the field of study and acquired competencies.

The following **recommendations** are given for further improvement of the programmes:

All programmes

1. University Brawijaya should improve the availability and accessibility of information provided on its website. Relevant information on the study programmes, such as
 - a. the module descriptions
 - b. course contents,
 - c. the teaching methods
 - d. the organisation of the courses and exams
 - e. requirements for admission
 - f. information about the laboratories and provided infrastructure and software
 should be accessible on the website for students, prospective students, and for outside stakeholders as well. The website should be fully accessible in English.
2. The cooperation with the industry should be strengthened, e.g., in the context of cooperative research or the frequency of moderated meetings between faculty and industry partners.
3. The overall structure and design of the study programmes' information provided on the university's website should be harmonized and rendered more precisely to make navigation for external users easier.
4. The accessibility and the connection between the information on the curriculum map and the individual courses should be improved for all study programmes in this cluster. This also includes the overall structure and design of the study programmes' information provided on the university's website. It should be harmonized and rendered more precisely to make navigation for external users easier.
5. To achieve the development of the goals of UB, the university should increase the funding of the laboratories (investment in equipment) and of the supervisors.

Bachelor programme of Food Science and Technology (BFST)

1. The visibility of digitalisation in the curriculum should be increased by updating the course descriptions where required. To improve coherence of teaching of digital aspects in the curriculum, the faculty should develop an overall concept on how digitalisation is reflected in the curriculum.

Master's programme of Agricultural Product Technology (MAPT)

1. The visibility of digitalisation in the curriculum should be increased by updating the course descriptions where required. To improve coherence of teaching of digital aspects in the curriculum, the faculty should develop an overall concept on how digitalisation is reflected in the curriculum.

Master's programme Agricultural Engineering (MAE)

1. The visibility of digitalisation in the curriculum should be increased by updating the course descriptions where required. To improve coherence of teaching of digital aspects in the curriculum, the faculty should develop an overall concept on how digitalisation is reflected in the curriculum.

Master programme Agroindustrial Technology (MAIT)

1. The study programme should link the students' research with research conducted by the research centres that is provided by the research and community empowerment institute of UB.
2. The study programme should develop a strategy to attract more prospective students.

Doctoral Programme Food Science (DFS)

1. Measures should be introduced to ensure that PhD students can successfully finish their publication within the standard period of study.
2. It is strongly recommended that UB should invest in some innovative publication software to improve the quality of the promotion and international competition.
3. PhD candidates should be able to write good and high-quality publications in English. The panel of experts thus recommends that UB should intensify English support for the PhD programmes.
4. To be nationally and internationally competitive, the PhD programmes should consider increasing the required impact factor (to higher than one) of the journals and implementing measures to motivate the candidates to publish their work in a peer reviewed journal.
5. To improve leadership skills, PhD students should be more involved in the teaching process.
6. The PhD handbooks should be presented in a way that structures the provided information visually cohesive and clear.

Doctoral Programme Agroindustrial Technology (DAIT)

1. It is strongly recommended that UB should invest in some innovative publication software to improve the quality of the promotion and international competition.
2. To be nationally and internationally competitive, the PhD programmes should consider increasing the required impact factor (to higher than one) of the journals and implementing measures to motivate the candidates to publish their work in a peer reviewed journal.
3. To improve leadership skills, PhD students should be more involved in the teaching process.
4. The support and the guidance of the students should be improved, especially for the writing of the thesis.
5. The PhD handbooks should be presented in a way that structures the provided information visually cohesive and clear.

With regard to the reasons for this decision the Standing Commission refers to the attached experts' report.

EXPERTS' REPORT**ON THE STUDY PROGRAMMES**

- “FOOD SCIENCE AND TECHNOLOGY” (B.SC.)
- “AGRICULTURAL PRODUCT TECHNOLOGY” (M.SC.)
- “AGRICULTURAL ENGINEERING” (M.SC.)
- “AGROINDUSTRIAL TECHNOLOGY” (M.SC.)
- “AGROINDUSTRIAL TECHNOLOGY” (PHD)
- “FOOD SCIENCE” (PHD)

OFFERED BY UNIVERSITAS BRAWIJAYA, MALANG, INDONESIA

Visit to the university: 05-07 October 2022

Panel of experts:

Prof. Dr. Mamadou Diakité	Professor for Technology of Animal-Based Foods, Fulda University of Applied Sciences (Germany)
Prof. Dr. Hariolf Kurz	Professor for Agricultural Machinery Technology, Weihenstephan-Triesdorf University of Applied Sciences (Germany)
Prof. Dr. Ma'mun Sarma	Faculty of Economics and Management, Bogor Agricultural University (IPB University, Indonesia)
Ms. Alissa Singer	Head of Technical Service Agro, Evonik (Germany) (representative of the labour market) <i>– participation in writing based on provided documents</i>
Mr. Florian Frietsch	University of Freiburg (Germany) (student representative)
Coordinator:	
Maria Rentmeister	AQAS, Cologne, Germany
Ronny Heintze	

I. Preamble

AQAS – Agency for Quality Assurance through Accreditation of Study Programmes – is an independent non-profit organisation supported by more than 90 universities, universities of applied sciences and academic associations. Since 2002, the agency has been recognised by the German Accreditation Council (GAC). It is, therefore, a notified body for the accreditation of higher education institutions and programmes in Germany.

AQAS is a full member of ENQA and also listed in the European Quality Assurance Register for Higher Education (EQAR) which confirms that our procedures comply with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), on which all Bologna countries agreed as a basis for internal and external quality assurance.

AQAS is an institution founded by and working for higher education institutions and academic associations. The agency is devoted to quality assurance and quality development of academic studies and higher education institutions' teaching. In line with AQAS' mission statement, the official bodies in Germany and Europe (GAC and EQAR) approved that the activities of AQAS in accreditation are neither limited to specific academic disciplines or degrees nor a particular type of higher education institution.

II. Accreditation procedure

This report results from the external review of the degree programmes “Food Science and Technology” (B.Sc.), “Agricultural Product Technology” (M.Sc.), “Agricultural Engineering” (M.Sc.), “Agroindustrial Technology” (M.Sc.), “Agroindustrial Technology” (PhD), and “Food Science” (PhD) offered by Universitas Brawijaya in Malang, Indonesia.

1. Criteria

Each programme is assessed against a set of criteria for accreditation developed by AQAS: the AQAS Criteria for Programme Accreditation (Bachelor/Master) and the AQAS Criteria for Doctoral Programme Accreditation (PhD). The criteria are based on the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) 2015. To facilitate the review each criterion features a set of indicators that can be used to demonstrate the fulfilment of the criteria. However, if single indicators are not fulfilled this does not automatically mean that a criterion is not met. The indicators need to be discussed in the context of each programme since not all indicators necessarily can be applied to every programme.

2. Approach and methodology

Initialisation

The university mandated AQAS to perform the accreditation procedure in April 2021. The university produced a Self-Evaluation Report (SER). In December 2021, the institution handed in a draft of the SER together with the relevant documentation on the programmes and an appendix. The appendix included e.g.:

- an overview of statistical data of the student body (e.g. number of applications, beginners, students, graduates, student dropouts),
- the CVs of the teaching staff/supervisors,
- information on student services,
- core information on the main library,
- as well as academic regulations.

AQAS checked the SER regarding completeness, comprehensibility, and transparency. The accreditation procedure was officially initialised by a decision of the AQAS Standing Commission on 21 February 2022. The final version of the SER was handed in July 2022.

Nomination of the expert panel

The composition of the panel of experts follows the stakeholder principle. Consequently, representatives from the respective disciplines, the labour market, and students are involved. Furthermore, AQAS follows the principles for the selection of experts defined by the European Consortium for Accreditation (ECA). The Standing Commission nominated the aforementioned expert panel in July 2022. AQAS informed the university about the members of the expert panel and the university did not raise any concerns against the composition of the panel.

Preparation of the site visit

Prior to the site visit, the experts reviewed the SER and submitted a short preliminary statement including open questions and potential needs for additional information. AQAS forwarded these preliminary statements to the university and to all panel members in order to increase transparency in the process and the upcoming discussions during the site visit.

Site visit

After a review of the SER, a site visit to the university took place on 05-07 October 2022. On site, the experts interviewed different stakeholders, e.g. the management of the higher education institution, the programme management, teaching and other staff, as well as students and graduates, in separate discussion rounds and consulted additional documentation as well as student work. The visit concluded by the presentation of the preliminary findings of the group of experts to the university's representatives. As Ms. Alissa Singer could not participate in the site visit in Indonesia due to sudden illness, she contributed to the report in writing based on the provided documents.

Reporting

After the site visit had taken place, the expert group drafted the following report, assessing the fulfilment of the AQAS Criteria. The report included a recommendation to the AQAS Standing Commission. The report was sent to the university for comments.

Decision

The report, together with the comments of the university, forms the basis for the AQAS Standing Commission to take a decision regarding the accreditation of the programmes. Based on these two documents, the AQAS Standing Commission took its decision on the accreditation on 03 February 2023. AQAS forwarded the decision to the university. The university had the right to appeal against the decision or any of the imposed conditions.

In April 2023, AQAS published the report and the result of the accreditation as well as the names of the panel of experts.

III. General information on the university

Universitas Brawijaya (UB) is a public university located in Malang, East Java, Indonesia. It was founded in 1963, has three campuses, 16 faculties and offers 177 study programmes (Diploma programmes, vocational programmes, Bachelor, Master and PhD programmes) to over 60,000 students. UB employs close to 2,100 lecturers and about 1,900 education staff.

The university purses a Tridharma of education, research, and community service. It has defined its vision and mission at university level, as well as at faculty level. The activities of UB are based on its Strategic Planning for the period 2020-2024, under which specific performance targets in the three areas of education, research and community service as well as in institutional management have been set. The university has identified milestones and specific targets to be reached including having 85 % of study programmes internationally accredited by 2039. In the shorter term, UB wants to focus on creating a sustainable environment by improving the quality and quantity of educational and community services, infrastructure and facilities.

The faculty of Agricultural Technology (FAT UB) was established in 1998 and, following the SER, pursues three core activities: 1. to organize an educational process to produce graduates who excel in the field of agricultural science and technology, with strong character, possess entrepreneurial spirit and are globally competitive; 2. to conduct research and development of agricultural science and technology in order to promote the improvement of Agroindustrial science and contribute to solving global problems; 3. to disseminate agricultural science and technology and use it for the welfare of the community, as well as establish strong cooperation with national and international stakeholders. The faculty is directed by a dean and has three departments, offering six Bachelor programmes, three Master programmes and two Doctoral programmes. According to the SER the FAT UB aims at supporting the study programmes particularly in their internationalization and strengthening their outcome-based education.

IV. Assessment of the study programmes

1. Quality of the curriculum / Aims and structure of the doctoral programme

Bachelor's/Master's degree

The intended learning outcomes of the programme are defined and available in published form. They reflect both academic and labour-market requirements and are up-to-date with relation to the relevant field. The design of the programme supports achievement of the intended learning outcomes.

The academic level of graduates corresponds to the requirements of the appropriate level of the European Qualifications Framework.

The curriculum's design is readily available and transparently formulated.

[ESG 1.2]

Doctoral degree

The intended learning outcomes of the programme are defined and available in published form. They reflect both academic and labour-market requirements and are up-to-date with relation to the relevant field. The design of the programme supports the achievement of the intended learning outcomes.

The academic level of graduates corresponds to with the requirements of the appropriate level of the national qualifications framework or the European Qualifications Framework.

The curriculum's design is readily available and transparently formulated.

[ESG 1.2]

Description

General Information

The SER states that the design and development of curriculum of the study programmes refers to the Indonesian Qualification Framework (IQF) as well as to other national and university regulations. Compared to the European Qualification Framework, IQF level 6 refers to EQF level 6 for the bachelor programmes, IQF level 8 refers to EQF level 7 for the master programmes and IQF level 9 refers to EQF level 8 for the doctoral programmes. It is stated within the description of the programmes in the SER that feedback from stakeholders and several professional associations is included within the curriculum development.

There are said to be sixteen meetings in one semester, including the mid-term and final examination. The university applies semester credit units (SCU) to evaluate the workload. One semester credit unit is supposed to be 1.5 ECTS and includes according to the ministry's and the university's regulation either a) 50 minutes of learning activities and 60 minutes of structured assignment and 60 minutes of self-study per week per semester for lectures and tutorials, or b) 100 minutes of learning activities and 70 minutes of self-study per week per semester in case of seminars, or c) 170 minutes of practice e.g. for field practice or internship.

Bachelor programme of Food Science and Technology (BFST)

The bachelor programme of Food Science and Technology intends to offer an international education programme oriented towards producing scientists, industry practitioners, and entrepreneurs who are professionals in the field of food science and technology. Graduates shall be enabled to work as food product specialist, food product development scientist, quality control and assurance supervisor, food production supervisor, food analyst supervisor, food safety auditor, food packaging supervisor, food ingredient specialist, nutritionist, plant operation manager or top management. Within the programme, research to develop science and technology in the field of food is to be conducted and it is also aiming at participating in the implementation and dissemination of food science and technology in order to encourage the development of industry.

Within the bachelor programme three Programme Learning Outcomes (PLO) are formulated which are:

- 1) Graduates are competent in solving the problem related to food in general and related to food processing in industrial scale and small-medium food enterprises in particular.
- 2) Graduates are professional, initiative, able to lead, able to communicate to collaborate and to be responsible to achieve organization goals
- 3) Graduates are creative, adaptive and anticipative towards dynamic changes and willing to develop themselves in different situation and upholding ethics

Corresponding to those PLOs, the programme has formulated 13 Intended Learning Outcomes (ILOs) referring to aspects of knowledge, specific skills, and soft skills. An ILO example referring to the aspect of knowledge would be to have in-depth knowledge of the principles in food law and regulation. An ILO example of specific skill would be able to integrate and apply the principles in food science and technology in designing integrative processing unit to produce safe, high quality and nutritious food products. An example of a soft-skill related ILO would be to be committed to professionalism, ethics, diversity and inclusivism.

144 SCU (semester credit unit) equal to 216 ECTS are to be completed in the bachelor's programme. The curriculum includes by national regulation compulsory courses (12 SCU) such as "Pancasila" or "Religion". It includes foundational courses (37 SCU) such as "Biology", "Statistics", "Scientific Method". Core competency courses (67 SCU) are for example "Food Chemistry", "Food Engineering", "Quality Control". There are also project courses (16 SCU) which are the Internship, Entrepreneurship, Laboratory Work of Entrepreneurship, Community Service and the Undergraduate Thesis. Elective courses make up 12 SCU of the curriculum.

The curriculum incorporates the Freedom of Learning Regulation (MBKM) of the Ministry of Education, which allows students to take a certain number of credits outside the study programme, e.g. at other universities or even choose learning activities outside universities, e.g. by doing an internship or humanitarian project.

Experts' evaluation

The Bachelor's programme of Food Science and Technology has clearly formulated Intended Learning Outcomes (ILOs) that state the desired qualifications to be achieved during the programme. The experts find these ILOs to be both, subject-specific and interdisciplinary in nature. Overall, the ILOs are appropriate and reflect the current developments in the academic field based on the provided evidence of graduate surveys and feedback from the labour market. In conclusion, the Bachelor's degree awarded for the programme corresponds to the learning outcomes and requirements according to the European Qualifications Framework as well as the National Indonesian Qualification Framework (IQF). Students demonstrate their qualifications and achievement of the ILOs by submitting a final thesis.

Regarding the curricular elements (courses/modules), the experts were provided with documentation of the elements and their functions. The experts conclude that the curricular structure of this Bachelor's study programme supports the achievement of the learning outcomes and that the order of curricular elements supports the learner's progression. Overall, the programme's curriculum covers subject-specific and cross-subject knowledge, as well as subject-related, methodological, and general skills. This is documented on the level of the intended learning outcomes. Based on the provided documents, the experts conclude that it is transparently described which elements/courses are offered exclusively for the programme and which parts are used in other programmes. Likewise, curricular modifications are documented in a transparent manner and contribute to an improvement in programme quality. However, the experts find that the easily accessible description and documentation of the curriculum does not clearly indicate which elements are compulsory and which are electives. Consequently, the panel concludes that the published course descriptions and description of the curriculum must be completed regarding a clear indication of compulsory and elective modules. Also, in the currently published course descriptions the information regarding the types of examinations is not clear enough and too general. It requires specification regarding the form of examination (**Finding 1**).

For students and experts alike, an idealized typical course plan is available. When considering the curriculum, the experts learned during the discussion that digitalisation is addressed in many courses but that the course descriptions do not indicate so. Based on the documents and interviews, the experts conclude that while digitalisation is included in the curriculum, the Faculty does not yet have an overall concept of how digitalisation is addressed in the courses, how the different occurrences are connected etc. The experts thus recommend addressing digitalisation in the curriculum more explicitly in order to make its inclusion in the curriculum visible (e.g. renaming courses that address digitalisation and also add it to the course descriptions where appropriate) (**Finding 2**). Other than that, the documentation of the curriculum describes specific elements, such as distance education or internships in an appropriate way. In total, the programme workload (SCU/ECTS) is correctly and transparently allocated to the different courses/modules. Each element of the curriculum has a correct number of credits assigned to it in the local system. The transfer into ECTS is also documented.

For this study programme, the information about the courses are linked on the website. However, the accessibility and the connection between the information on the curriculum map and the individual courses should be improved (**Finding 3**). On a different note, the level of the cooperation is already good in the field of internships, but it should be improved, e.g., in the context of cooperative research or the frequency of talks between faculty and industry partners (**cf. Finding 6 below**).

Conclusion

The criterion is fulfilled.

Master's programme of Agricultural Product Technology (MAPT)

The Master's programme of Agricultural Product Technology intends to produce academically qualified human resources who positively contribute to the social community through a Master education in agricultural product technology areas. Within the programme, research is to be conducted to develop science and technology related to agricultural product technology areas. Also, it is aiming at disseminating science and technology related to agricultural product technology area as well as to promote its application for improving agro-industrial community prosperity.

Within the Master's programme MAPT six Programme Learning Outcomes (PLO) are formulated as follows: Upon completion of the programme, students are

- 1) Highly competent in core areas of food science and agricultural product technology.
- 2) Able to integrate and apply their knowledge to solve problems in food science and agricultural product technology through inter or multidisciplinary research approaches.
- 3) Able to plan, manage resources, lead research activities and synthesize research results to contribute to the development of food science and agricultural product technology.
- 4) Able to communicate scientific ideas through written, oral and visual means in Indonesian and English and able to discuss these ideas at a higher level.
- 5) Able to demonstrate professionalism and leadership skills.
- 6) Have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous.

Corresponding to those PLOs the programme has formulated 20 Intended Learning Outcomes referring to aspects of knowledge, specific skill and soft skills. An ILO example referring to the aspect of knowledge would be to demonstrate a comprehensive understanding of biochemical processes, concepts of nutrition and the awareness of relationship between food, nutrition and health. An ILO example of specific skill would be able to plan and carry out an experimental investigation under supervision and write a scientific report following standard conventions. An example of a soft-skill related ILO would be to demonstrate autonomy, self-direction, initiative and effective decision making in complex and unpredictable situations.

41 SCU (semester credit unit) equal to 61.5 ECTS are to be completed in the Master's programme. The curriculum consists of compulsory courses (19 SCU), elective courses (10 SCU), and the thesis as well as courses to support the thesis writing and research process (12 SCU in total). Compulsory courses include for example "Advanced Food Analysis" or "Selected Topic Seminar in Agricultural Product Technology". Courses offered as elective course are for example "Food Safety Microbiology", "Waste Management" or "Nutrition and Immunology".

Experts' evaluation

For the Master's programme of Agricultural Product Technology, the experts conclude that the desired qualifications to be achieved during the programme are presented as Intended Learning Outcomes (ILOs). For this programme, the ILOs are both subject-specific and interdisciplinary in nature as well as appropriate. Based on the evidence provided through evaluations, graduate surveys and feedback from the labour market, the experts received sufficient proof of ILO's appropriateness. The panel of experts is convinced that the ILOs are up to date according to current developments in the academic field and labour market. Overall, the achievement of the intended level of qualification can be demonstrated upon completion of the programme with a final thesis.

However, the denomination of the academic degree awarded to the graduates does not correspond to the learning outcomes of the programme. While clearly the requirements of the Master level of the European Qualifications Framework are met and achieved, the awarded academic title stated on the diploma is “Master of Agricultural Technology” which is misleading and to a certain extent evidently wrong. Because Agricultural Technology and Agricultural Product Technology are clearly different fields, the panel was happy to hear that also the faculty did not oppose this view during the interviews. Consequently, the denomination of the academic degree awarded in the programme must be adjusted in line with international standards (**Finding 4**). Otherwise, an international comparison of the graduates’ qualifications based on the academic title is not possible.

The panel of experts concludes that all curricular elements (courses/modules) and their functions are documented. The curricular structure of the study programme supports the achievement of the learning outcomes, and its elements support the learner’s progression. It is documented on the level of the ILOs that the curriculum covers subject-specific and cross-subject knowledge, as well as subject-related, methodological, and general skills. Furthermore, it is transparently described which courses are offered exclusively for the programme and which parts are used in other programmes. The experts confirm that curricular modifications are documented in a transparent manner and contribute to an improvement in programme quality.

Similar to the above-stated Bachelor’s programme, the experts find that the easily accessible description and documentation of the curriculum does not clearly indicate which elements are compulsory and which are electives. For this Master’s programme, the published course descriptions must be completed regarding a clear indication of compulsory and elective modules. Also, in the currently published course descriptions the information regarding the types of examinations must be specified (**cf. Finding 1**). Likewise, the experts also conclude for this programme that while digitalisation is included in the curriculum, the Faculty does not yet have an overall concept of how digitalisation is addressed in the courses, how the different occurrences are connected etc. The experts thus recommend addressing digitalisation in the curriculum more explicitly in order to make its inclusion in the curriculum visible (e.g. renaming courses that address digitalisation and also add it to the course descriptions where appropriate) (**cf. Finding 2**).

For this study programme, the information about the courses are linked on the website. However, the accessibility and the connection between the information on the curriculum map and the individual courses should be improved (**Finding 3**). On a different note, the level of the cooperation is already good in the field of internships, but it should be improved, e.g., in the context of cooperative research or the frequency of talks between faculty and industry partners (**cf. Finding 6 below**).

Conclusion

The criterion is partially fulfilled.

Master’s programme Agricultural Engineering (MAE)

The Master’s programme Agricultural Engineering intends to provide an international level of education, developing research and implementing research results in the field of agricultural and biosystem engineering, natural resource and environmental engineering, and agricultural mechanization management systems. Its graduates are to be prepared to pursue careers in the bioprocessing and agroindustrial machinery sector, or in the natural resources and environmental engineering sector, as well as in the sector of management of agricultural mechanization.

Within the Master’s programme MAE three Programme Learning Outcomes (PLO) are formulated which are:

- 1) Graduates acquire professional leadership roles (e.g. production supervisors, assistant manager) in the agricultural engineering sector and related fields as mentioned above.
- 2) Graduates establish commitment and contribute towards sustainable and biobased economy development for better society.
- 3) Graduates engage in lifelong learning in conducting practical engineer tasks in the sectors as mentioned above (e.g. engineering designer, early level researcher)

Corresponding to those PLOs the programme has formulated seven Intended Learning Outcomes (ILOs) referring to aspects of knowledge, specific skill and soft skills. An ILO example referring to the aspect of knowledge would be to understand the theory and application of modelling in the scope of agricultural engineering and biosystems. An ILO example of specific skill would be to be able to identify, analyse, evaluate, and formulate a problem in the field of agricultural engineering and biosystems by means of scientific approaches and methods. An example of a soft-skill related ILO would be to be able to develop and manage scientific research activities using critical, systematic, and innovative thinking.

40 SCU (semester credit unit) are to be completed in the Master's programme. The curriculum consists of compulsory courses (15 SCU), elective courses (13 SCU), and the thesis as well as courses to support the thesis writing and research process (12 SCU in total). Compulsory courses include for example "Agricultural Engineering and Biosystems Management" or "Research Methodology". Courses offered as elective course are for example "Engineering Hydrology", "Decision-Making Techniques" or "Advanced Drainage".

Experts' evaluation

For the programme "Master of Agricultural Engineering", the Intended Learning Outcome and the desired qualifications are suitable, according to the provided information in the SER. The course description provided in the SER is well documented and meets international standards. While the experts were convinced during the site visit that students are well-informed about the ILOs and course descriptions while enrolled in the programme, the experts found it difficult to access this information for someone who is not enrolled as a student. Therefore, at this point, Universitas Brawijaya should improve the accessibility of the module description and further relevant information on its website (**Finding 5**). This finding will be elaborated in more detail throughout the report. According to the statements of the partners from the industry and of the alumni, the programme is regularly evaluated within a period of four years. Also, according to the statements of the involved staff, the programme is updated regularly in order to implement current topics of the research area or the industry. This fact is well reflected in the topics of the Master's thesis and the module handbooks provided. Consequently, the panel of experts concludes that the programme and the desired learning outcomes meet the requirements of the academic and scientific labour market.

The implementation of digitalisation tools and methods is – according to the statements of the lecturers – already included in the current education in mechatronics. This important aspect is one of the main factors in the current international research community and in the industry and therefore should be made more visible in the curriculum, for example in the denomination of the courses and the associated laboratory work. This would help to account for the current developments in the industrial and research community (**cf. Finding 2**).

The programme is evaluated regularly, involving students and alumni. During the site visit students confirmed that it is a requirement to fill out the evaluation procedure (for all programmes alike) in order to get access to information about the final grade in the online system of the university. Therefore, it is guaranteed that every student is attending the evaluation. The evaluation questions were made available for the experts' review during the site visit and were seen as suitable to give comprehensive feedback to the lecturer. The feedback provided by multiple lecturers lies between good and very good in average. This indicates that the teaching approach and the subject of the courses are suitable.

The experts value the lecturers' emphasis to constantly modify and improve the topic of their lessons and the teaching methods. From the expert's point of view and based also on the interviews with students and alumni the cooperation with the industry could still be intensified to increase the link to application and real-world experience for students. The level of the cooperation is already good in the field of internships, but it should be improved, e.g., in the context of cooperative research or the frequency of talks between faculty and industry partners (**Finding 6**). According to the statements from the staff, the cooperation with the industry is allocated via guest lecturers and input for the topic for the Master's thesis. The Master's thesis provided to the experts for review at the site visit are suitable to demonstrate the appropriateness of the learning outcomes. The outcome of the thesis has to be published in international journals and has to be defended in an "engineering seminar" with the attendance of external experts. This is appreciated by the experts and helps to maintain and improve the quality of the programme.

The curricular elements are shown in the curriculum map. The distinction between compulsory and elective courses is clearly indicated. For each course, the learning outcome, type of assessment, the workload, amount of contact hours, the intended time of independent study, the maximum class size, the prerequisites for participation, the teaching methods (i.e. group discussions, collaborative learning, cooperative learning and project-based learning) are listed. Based on the students' feedback during the site visit, the experts conclude that the various teaching methods are applied in a reasonable manner.

The experts received sufficient evidence based on statements of the students that student representatives are involved in the organizational process of each module in order to adjust and implement the needs of the students into the curriculum. However, the experts also learned that students find the accessibility of the lecturers difficult in case of questions. Overall, the progression of the students is assisted by independent supervisors and, in case of non-academic problems, the help of counsellors and/or psychologists can be claimed. This information is well known to students and can also be found on the website of UB. For this study programme, the information about the courses are linked on the website. However, the accessibility and the connection between the information on the curriculum map and the individual courses should be improved (**Finding 3**).

Conclusion

The criterion is fulfilled.

Master programme Agroindustrial Technology (MAIT)

The Master's programme Agroindustrial Technology intends to create graduates possessing the ability as a qualified academician and / or professionals. It also aims at conducting research activities to create high quality graduates that can develop sustainable Agroindustrial systems both in national and international forums as well as creating high quality graduates that can disseminate research to improve people's welfare.

Within the Master's programme MAIT four Programme Learning Outcomes (PLO) are formulated as follows:

Upon completion, graduates aim at

- 1) Becoming an agroindustrial engineer capable of designing and developing system engineering, process engineering, engineering management of smart-sustainable agroindustry
- 2) Becoming a professional in analysing techno-economic, risk, sustainability and development policies of Agroindustrial innovation based on local wisdom
- 3) Becoming a road map-based researcher and engineer with an inter or multidisciplinary and multicultural approach

- 4) Becoming an individual with a lead character, global perspective, integrity, good communication skills, and courage.

Corresponding to those PLOs the programme has formulated six Intended Learning Outcomes (ILOs) referring to aspects of knowledge, specific skill and soft skills. An ILO example referring to the aspect of knowledge would be to be capable of designing and developing science of system engineering, process engineering and engineering management in smart-sustainable agroindustry. An ILO example of specific skill would be capable of designing and developing technopreneurship in agroindustry. An example of a soft-skill related ILO would be to be capable of developing national and international collaboration networks in the agroindustry sector.

40 SCU (semester credit unit) are to be completed in the Master's programme. The curriculum consists of compulsory courses (14 SCU), elective courses (12 SCU), and the thesis as well as courses to support the thesis writing and research process (14 SCU in total). Compulsory courses include for example "System Modelling Analysis" or "Biotransformation Engineering". Courses offered as elective course are for example "Agroindustry Quality System and Management", "Palm Process Engineering" or "Halal Industry".

Experts' evaluation

The desired qualifications by the MAIT Programme have been presented in the intended learning outcomes. The curriculum for this programme includes subject-specific and interdisciplinary elements. The experts also conclude that the curriculum offers a good balance between electives and compulsory courses as students can choose elective courses with a total of 12 SCU (18 ECTS) out of a total of 40 SCU (60 ECTS).

The University reviews the achievement of the ILO and the PLO every 5 years. This evaluation involves employers of graduates and the labour market. This is done as a way for the development of the scientific field and is also used as a basis for the continuous improvement of education activities. In addition, UB conducts a tracer study, and the results of this tracer study can be used for academic development of the programme and for an adjustment to the programme's workforce.

Overall, the experts conclude that the academic degree awarded has met the Indonesian Qualification Framework (IQF) as well as the requirements of the European Qualifications Framework. The panel of experts had access to examples of the programme's theses, tests, and final thesis in the documents provided and during the site visit. In the curriculum of the MAIT study programme, the curriculum for compulsory and elective courses has been explained as well as a thesis. The number of SCUs is spread in a balanced manner for compulsory, elective and thesis subjects with due regard to the Indonesian National Qualification Framework.

Nevertheless, the panel of experts makes the following recommendations for improvement of the study programme. During the site visit, the experts learned that UB has a research and community empowerment institute. In order to strengthen the students' research skills, the experts recommend that the study programme should link students' research with research conducted by the research centres that is provided by the research and community empowerment institute of UB (**Finding 7**). Based on the documents provided, the experts noticed that the number of students for this study programme has decreased in recent years. While the university attributes the decreasing number of students to the coronavirus pandemic, the experts recommend that the study programme should develop a strategy to attract more prospective students (**Finding 8**). To attract more students, the panel of experts suggests to, e.g., pursue collaborations with agencies (government institutions and private institutions).

For this study programme, the information about the courses are linked on the website. However, the accessibility and the connection between the information on the curriculum map and the individual courses should be improved (**Finding 3**). On a different note, the level of the cooperation is already good in the field of

internships, but it should be improved, e.g., in the context of cooperative research or the frequency of talks between faculty and industry partners (**cf. Finding 6**).

Conclusion

The criterion is fulfilled.

Doctoral Programme Food Science (DFS)

The PhD programme Food Science is a doctoral educational programme in food science that produces independent human resources who are able to manage, lead, develop research and participate in global society, to conduct research for the development of local resources-based food science that are relevant to solve current problems in supporting national development synergized with other disciplines and to disseminate actively the innovative and applicative research results for an increasing added value for society. The SER states that most doctoral students already have positions and careers as researchers or lecturers in a government research institute (Agricultural Technology Research Centre Ministry of Agricultural; Agricultural Training Centre Ministry of Agricultural) or university lecturer (Food Science and Technology Department, Agricultural Technology), therefore the graduates of this programme are supposed to be supported in enhancing professional career as a researcher or a lecturer after they finish their study.

Within the PhD programme DFS four Programme Learning Outcomes (PLO) are formulated which are:

- 1) Developing science and technology regarding food processing through research to produce creative, innovative, and original work.
- 2) Solving problems in science and technology related to food and agricultural products through the interdisciplinary approach.
- 3) Developing research and implementing the result to society as an attempt to acquire national and international recognition.
- 4) Taking roles as researchers, academics, practitioners, or professionals with reliable skills, mastering concepts and theories, and applying and developing food and related sciences.

Corresponding to those PLOs the programme has formulated four Intended Learning Outcomes (ILOs) referring to aspects of knowledge and soft skills. An ILO example referring to the aspect of knowledge would be able to do recent, innovative, and applicative research in food science, giving results and impact to improve competitiveness of the local foods. An example of a soft-skill related ILO would be to be able to plan, manage lead, act and develop a research road map in food science through the inter-, multi- and transdisciplinary approaches for society welfare.

42 SCU (semester credit unit) are to be completed in the PhD programme. The curriculum consists of 4 SCU (2 courses) of compulsory courses, such as “Advanced Food Science” and 8 SCU (4 courses) of elective courses, such as “Sensory Science”. The curriculum also incorporates a total of 30 SCU for the dissertation, including a qualification exam (1 SCU), a writing proposal and exam (2 SCU), as well as three courses named “Research and Presentation of research progress” (6 SCU each) and also two international publications (4 SCU), as well as writing the dissertation and defense (5 SCU).

Experts' evaluation

The Doctoral Programme in Food Science (DFS) is evaluated based on the SER, the provided annexes as well as the information gained during the discussions at the site visit.

The DFS programme is based on a PhD structure and should be completed within 3 years. The aim is to competently prepare the candidates for future challenges in research, industry, and society. Based on the illustrated curriculum map provided, the panel of experts concludes that the curriculum well-structured to achieve the desired goals. The variety of electives courses allows to deepen the knowledge in the field of food science in the first semester and then to complete the extended knowledge with an exam in the second semester. The panel of experts confirms that the desired qualification goals can and will be achieved more efficiently by doing so. This means that the 3rd, 4th and 5th semesters are reserved for research and publications. Unfortunately, the panel of experts learned that very little time was planned for PhD students to successfully finish their publication. Measures should be introduced to ensure that PhD students can successfully finish their publication within the standard period of study (**Finding 9**).

For the Doctoral Programme in Food Science, the desired qualifications to be achieved during the programme are presented as intended learning outcomes (ILO). The ILOs provided in the SER show that the programme is not only subject-specific and interdisciplinary in nature, but also take into account the requirements regarding the formation of future leaders in the area of research, industry and society. The panel of experts confirms that specific courses such as "Philosophy and Research Method in Food Science" and "Advanced Food Science" are of great importance for this.

In order to design knowledge-based learning outcomes, a variety of courses, such as "Bioactive Compounds and their use" or "Advanced Physiology and Metabolism of Nutrients", are offered to achieve these goals. This makes the programme more innovative and sustainable in structure, taking into account both the current and future needs of society. Overall, the panel of experts concludes that the ILOs of the DFS programme are addressed to support graduates in enhancing professional career as researcher or a lecturer. The experts further conclude that courses like "Qualification exam" and "Research and presentation of research progress", guide the candidates in a goal-oriented manner so that the work can be completed successfully and on time.

All necessary information for a successful PhD degree is summarized in the DFS Handbook, which was made available to the experts. There are even examples of dissertations available. The panel of experts confirms that the assessment criteria are transparently described in the DFS handbook right from the start. As PhD candidates have to improve the weak points before completing the PhD, the panel of experts agrees that it makes the programme more transparent and efficient. Overall, the academic degree awarded to the graduates (Doctor of Food Science) corresponds to the learning outcomes and the requirements of the appropriate level of the European Qualifications Framework. Additionally, the level of qualification corresponds to the respective level of the Indonesian National Qualifications Framework. Graduates of the programme have demonstrated their qualification by completing a final thesis.

For the DFS programme, all curricular elements (courses/modules) and their functions are documented. The ILOs document that the curriculum covers subject-specific courses, such as "Philosophy and Research Method in Food Science" and "Advanced Food Science", and cross-subject knowledge, as well as subject-related, methodological, and general skills. The panel of experts concludes that the PhD programme is well planned. A structured schedule with important milestones of the doctorate is available and can be used for orientation during the entire duration of the PhD. Overall, the courses are at an appropriate doctoral level. For PhD candidates, the planning of the work is carried out with support of the supervisor. The programme also takes the mobility of the candidates who, for example, also work abroad, into account. The experiments are application-oriented and are carried out on a practical scale in the laboratories. Cooperation with the labour market also exists. The programme therefore also supports the transfer of knowledge on a practical scale with the industry.

In general, the curricular modifications for this programme are documented in a transparent manner and contribute to an improvement in programme quality. The curriculum provided defines which elements are compulsory and which are elective. It is described if the programme includes specific elements, such as distance

education, part-time studies, or internships etc. These specifics are reflected in the design of the curriculum. The experts conclude that the total programme workload (SCU/ECTS) is correctly and transparently allocated to the different courses/modules. For successful progression in the PhD programme, a correct number of credits is assigned to all elements of the curriculum.

In the field of applied science, software support is required for most experiments today. The performance of a PhD is measured by publications. Better publication possibilities are made possible by innovative software. As it is difficult to publish classic results only, it is strongly recommended that UB should invest in some software to improve the quality of the dissertation and international competition (**Finding 10**).

During the site visit, the panel of experts could witness that the level of English of the bachelor's graduates is considerably better than that of the PhD graduates. However, the PhD candidates should be able to write good and high-quality publications in English. This is only possible if the appropriate English language skills are available. The panel of experts thus recommends that UB should intensify English support for the PhD programme (**Finding 11**). The experts are convinced that this will be beneficial to strengthen UB's quality of the programme.

In order to have PhD graduates with a nationally and internationally competitive qualification, the panel of experts points out that for PhD candidates it is currently required to publish simple publications with a lower impact factor (under 0.5). Because the quality of a publication is measured by the impact factor, the experts conclude that the low impact factor means that the PhD has the potential to strengthen the quality of the PhD qualification. To be nationally and internationally competitive, the PhD Programme should introduce publications with higher impact factors (higher than one) (**Finding 12**).

Furthermore, the panel of experts considers PhD graduates to be future leaders. This qualification also requires scientific and pedagogical qualities. To improve leadership skills in the area of pedagogy, PhD students should be more involved in the teaching process (**Finding 13**).

For this study programme, the information about the courses are linked on the website. However, the accessibility and the connection between the information on the curriculum map and the individual courses should be improved (**Finding 3**). On a different note, the level of the cooperation is already good in the field of internships, but it should be improved, e.g., in the context of cooperative research or the frequency of talks between faculty and industry partners (**cf. Finding 6**).

Conclusion

The criterion is fulfilled.

Doctoral Programme Agroindustrial Technology (DAIT)

The PhD programme Agroindustrial Technology intends to organize a doctoral education in the field of Agricultural Industrial Technology through the process of research-based scientific development. It also aims at carrying out scientific research and development activities in the field of technology, agroindustry management and agroindustry system engineering, as well as distributing new findings in the form of scientific work on a national and international scale.

Within the PhD programme DAIT three Programme Learning Outcomes (PLO) are formulated which are:

- 1) Becoming an individual/leader who is capable of thinking, acting innovatively in solving problems and becoming a source of innovative inspiration in the field of smart and sustainable agro-industry.
- 2) Becoming a knowledgeable individual in agroindustry and its prospects for development.

3) Becoming a researcher or engineer who is capable of conducting research or engineering in a team and publishing in national, international scientific journals or produce intellectual property rights.

Corresponding to those PLOs the programme has formulated three Intended Learning Outcomes (ILOs) referring to aspects of knowledge and soft skills. The ILOs referring to the aspect of knowledge are 1) to be able to analyze, solve problems and innovate in the field of agroindustry (process engineering, bioprocess, system engineering, management and environment) through a multi-disciplinary and multi-cultural approach as well as 2) to be able to develop agroindustry science (process engineering / bioprocess, system engineering, management and environment) through research that has a novelty to produce publications at the international levels. The soft-skill related ILO would be to manage, lead teams, and build research in the field of creative and sustainable agroindustry.

42 SCU (semester credit unit) are to be completed in the PhD programme. The curriculum consists of 6 SCU (3 courses) of compulsory courses, such as “Agroindustrial Innovation Science” and 8 SCU (4 courses) of elective courses, such as “Downstream Product Technology”. The curriculum also incorporates a total of 28 SCU for the dissertation, including a qualification exam (1 SCU), a writing proposal and exam (2 SCU), as well as three courses named “Research and Seminar” (6 SCU each) and two international publications (4 SCU), as well as writing the dissertation and defence (5 SCU).

Experts’ evaluation

The curriculum of the doctorate programme “Agricultural Technology” was available for the experts in the curriculum map in the SER. The focus of the programme lies in the preparation of the students for the scientific labour market. Therefore, the curriculum contains mandatory and elective courses that provide subject specific knowledge and soft skills. The number of credits is assigned in SCU. However, the experts took note that the workload of students is not accurately reflected by the stated workload, especially when the assigned ECTS (1 ECTS = 25-30 hours (60 minutes)) are considered. The experts expect that the actual workload of students is higher than the credits suggest in SCU and ECTS. Therefore, for this doctorate programme, the experts conclude that the conversion of the SCU to ECTS must be reconsidered to reflect the actual workload (**Finding 14**).

The desired qualifications of the doctoral programme are demonstrated in the final thesis. At the site visit, the panel of experts was able to review multiple thesis and was thus able to conclude that the level of quality appeared to be appropriate. According to the statement of the labour market stakeholders, the intended learning outcome and the labour market requirements are met, the degree holders are well prepared for the labour market and well received.

The structure of the curriculum and its time plan according to the curriculum map is suitable to support the students with their progression and achievement of the intended learning outcome. During the site visit the panel of experts received feedback from the students that during the final stages of the study programme, especially for the writing of the thesis, the students need more support to finish the thesis in the intended period of time. The panel of experts recommends that the support and the guidance of the students should be improved (**Finding 15**).

In order to enhance the quality standards of the programme and to achieve the development goals of the university, Universitas Brawijaya should consider increasing the required impact factor of the journals and implementing measures to motivate the candidates to publish their work in a peer reviewed journal (**cf. Finding 12**). Similar to the other PhD programme in this cluster, UB should involve the PhD students more in the teaching and instruction of students of undergraduate and graduate programmes in order to further enhance their leadership skills (**cf. Finding 13**).

For this study programme, the information about the courses are linked on the website. However, the accessibility and the connection between the information on the curriculum map and the individual courses should be improved (**Finding 3**). On a different note, the level of the cooperation is already good in the field of internships, but it should be improved, e.g., in the context of cooperative research or the frequency of talks between faculty and industry partners (**cf. Finding 6**).

Conclusion

The criterion is fulfilled.

2. Procedures for quality assurance

Bachelor's/Master's degree

The programme is subject to the higher education institution's policy and associated procedures for quality assurance, including procedures for the design, approval, monitoring, and revision of the programmes.

A quality-oriented culture, focusing on continuous quality enhancement, is in place. This includes regular feedback mechanisms involving both internal and external stakeholders.

The strategy, policies, and procedures have a formal status and are made available in published form to all those concerned. They also include roles for students and other stakeholders.

Data is collected from relevant sources and stakeholders, analysed, and used for the effective management and continuous enhancement of the programme.

[ESG 1.1, 1.7 & 1.9]

Doctoral degree

The programme is subject to the higher education institution's policy and associated procedures for quality assurance, including procedures for the design, approval, monitoring, and revision of the programmes.

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[ESG 1.1, 1.7 & 1.9]

Description

The quality assurance system stated by UB in the SER is carried out on an external and internal level and follows national regulations from the ministry. According to the provided documents, the university uses the PDCA (Plan, Do, Check, Act) cycle for quality assurance activities. On an external level, audits are done through certification of ISO 9001 Quality Management System as well as through accreditation by the National Accreditation Agency for Higher Education (BAN-PT). According to the SER the Bachelor programme, as well as the Master programmes to be accredited in this procedure received an "A" accreditation by BAN-PT, so did the PhD Programme DAIT, while the PhD Programme DFS received the grade "B".

Internal audits are done by a Quality Assurance Centre of the university that oversees and develops the quality assurance activities on university level. There exists also a Quality Assurance Cluster at faculty level and a Quality Assurance Unit the on department level, that are responsible for executing the quality assurance regulations, monitor implementation and gather data for the audits on the respective level. Evaluation data that is gathered include according to the SER: lecturer qualification; lecturer to student ratio; curriculum and learning outcomes; integration of research and community service into teaching and learning activities; feedback from

students and users; student academic and non-academic achievements; waiting time from graduation to work; graduate field suitability; number of publications by students; research and community service output by students. Students' progression as well as their satisfaction is also evaluated.

Outcomes from corrective actions are reported in the form of management reviews which are published on the faculty's website. These outcomes are said to be also presented to stakeholders and student representatives. The SER states several examples for corrective actions that have been taken, e.g. pointing towards enabling PhD students to graduate on time by setting milestones that have to be met or by formalizing scheduled meetings with their supervisors. Other examples are listed in the SER.

The SER further explains that the faculty implements integrity policies that include guidelines and procedures related to misconduct such as intolerance and discrimination towards all services to realize bureaucracy that is transparent, accountable, and free from corruption and nepotism. To avoid 'Plagiarism', which is considered to be inappropriate practice, the university has subscribed to an online service.

Experts' evaluation

To get a better understanding of the efficacy for the different evaluation systems being used for monitoring the different programmes at the faculty level, the experts conducted several talks about this topic with different stakeholder groups during the site visit. The different perspectives from teaching staff and students from the reviewed programmes showed a congruent perception of the evaluation systems to be very useful for assuring the programmes' quality. For instance, the teaching staff showed several results of previous course evaluations which already showed a high standard of the courses. The results of the evaluation are discussed and reflected in semesterly meetings at faculty-level. To get the results of the exams that were taken, the students need to participate in the course's evaluation, which makes the participation in the evaluation mandatory for students. Therefore, a high response of students is ensured by this evaluation system. Consequently, a reliable basis for the identification of problems and solid feedback for the teaching staff is guaranteed.

Also, the teaching staff of the different programmes showed a high interest in students' feedback in general. According to the students' response, the conversion of the students' feedback into an improvement of the teaching seems to be ensured. Furthermore, the lecturers are informed about each other's results. The panel of experts considers this as an additional incentive for lecturers to improve their own performance.

Furthermore, Universitas Brawijaya has an internal quality assurance team which controls the programmes each year. Corrections to the programmes are done annually. This cycle also contains a follow-up observation of the modifications. Additionally, the curricula are monitored in a cycle of four years due to government regulations. Whereas minor problems in the curricula are being solved right away, bigger modifications of the curricula are decided every four years.

The evaluation system also raises information about the development of employment of the alumni in a tracer study about six months after the graduation. Moreover, the teaching staff also takes an active role in the improvement of the programmes at faculty level through feedback and insertion of suggestions for reforms.

Besides the comprehensive evaluation cycles, the teaching staff of the faculty also provides a lot of support for the students in different ways. For instance, during the site visit the PhD students gave workshops, international seminars, financial support for translation of articles, and suggestions for fundings as examples.

However, the cooperation between the faculty and the industry seems to be a field where further efforts should be made to utilize synergies of cooperations. The level of the cooperation is already good in the field of internships, but it should be improved, e.g., in the context of cooperative research or the frequency of talks between faculty and industry partners (**cf. Finding 6**).

Regarding the PhD programmes, the panel of experts conclude that they correspond to the international standard. During the site visit, the expert could see that doctoral commission, programme coordinator and examination board are available and well structured. The responsibilities for the administration and quality assurance of the doctoral programmes are also clearly regulated and accessible to the students. The information is available as a handbook. However, the experts recommend that the PhD handbooks should be presented in a way that structures the provided information visually cohesively and clearly (**Finding 16**).

The selection of the PhD topic depends on the field of work of the supervising professor. Quality assurance is controlled by the design or structure of the programme. Regular meetings and seminars take place to control the progress and the quality of the PhD candidate's work. The speed and the number of publications also play an important role. Only after three publications, the doctorate can be completed by means of a defence. All in all, the experts confirm that this mechanism conforms to recognized academic standards.

Conclusion

The criterion is fulfilled.

3. Learning, teaching and assessment of students / Learning and assessment of students

Bachelor's/Master's degree

The delivery of material encourages students to take an active role in the learning process.

Students are assessed using accessible criteria, regulations, and procedures, which are made readily available to all participants and which are applied consistently.

Assessment procedures are designed to measure the achievement of the intended learning outcomes.

[ESG 1.3]

Doctoral degree

The form of supervision and/or course structure is adequate and corresponds with the intended learning outcomes.

Students are assessed using accessible criteria, regulations, and procedures, which are made readily available to all participants and which are applied consistently.

Assessment procedures are designed to measure the achievement of the intended learning outcomes.

[ESG 1.3]

Description

The SER states that procedures relevant to teaching and learning methods are published in an Academic Handbook of FAT UB which can be accessed via the university's website.

According to the SER, it is expected that students are able to think and learn independently, search for broader insights through literature study and bring new ideas into class or seminars for discussion. Teaching methods are said to consist of (1) Group discussion, (2) Simulation, (3) Case study, (4) Collaborative learning, (5) Co-operative learning, (6) Project-based learning and (7) Case-based learning and are applied in all programmes accordingly to the ILOs that are to be achieved. For the PhD programmes, the teaching and learning types are also dominated by research, design and development. Learning is carried out both synchronously and asynchronously, both face-to-face and online using the virtual learning environment/online learning platform of UB. Online learning activities are also facilitated by using google classroom, zoom, google meet, Edmodo, e-learning FTP, and WhatsApp. Further, UB states that participation in research activities of lecturers and community service is an integral part of the students' learning process.

The general assessment techniques that are listed by UB are observation, participation, demonstration, writing test, oral test and questionnaire, as well as quizzes, individual and group assignments, and presentations. The

SER states that examination types are based on the Bloom taxonomy. Midterm and final examinations are announced to be scheduled for the 8th and 16th weeks of the semester. Students who are unable to attend the exam for certain reasons, are allowed to take a re-examination when agreed upon by the student and the supporting lecturer maximum of one week after the exam date. The students' grades are combined from, e.g., attendance records, assignments, midterm exams, final semester exams, practicum, group work and presentations. A general complaints procedure has been defined at UB; students can file their complaints according to the learning, teaching, and assessment methods via e-complain on the website of UB.

In case of the PhD programmes, a series of dissertation-related activities is carried out, as described in the SER: Qualification examination, preliminary/proposal examination, research and seminar on the research progress (3 times), 1st and 2nd international scientific article publication, dissertation writing and dissertation examination in the form of "viva voce".

Experts' evaluation

The students of all programmes have the possibility to manage their study work freely. The students are informed about the content, the teaching methods, and the organisation of the course during the first lesson. This information is available for the students; however, the information is not easily accessible to outside stakeholders. The panel of experts therefore recommends that information about the course content, the teaching methods, organisation of the courses and exams should be accessible to outside stakeholders (cf. **Finding 5**).

According to the statements of the students, the access to laboratories is easy and flexible. If the equipment needed is not provided in the laboratories of UB, the equipment of other universities in Malang can be freely accessed as well.

At the beginning of the PhD programmes, PhD students are asked by their supervisor to provide a letter of intention concerning the topic of the thesis. This process is guided via the curriculum which includes the corresponding milestone as a course. This helps the PhD students in their progression in the programme. In a later stage, the research work has to be published in an international journal. This requirement is documented in the curriculum map.

The assessment regulations and methods are provided in the course descriptions and are accessible to the students. The panel of experts confirms that the different forms of examination are good for the development of the students' skills. As a general remark, the accessibility to the information on the examination should be improved (cf. **Finding 5**). While the required information is available, the experts would like to point out that it is not easily accessible to outside stakeholders.

Conclusion

The criterion is fulfilled.

4. Student admission, progression, recognition and certification / Legal status, admission and certification

Bachelor's/Master's degree

Consistently applied, pre-defined, and published regulations are in place which cover student admission, progression, recognition, and certification.

[ESG 1.4]

Doctoral degree

The institution is entitled to award a doctorate.

Consistently applied, pre-defined, and published regulations are in place which cover student admission, progression, recognition, and certification.

[ESG 1.4]

Description

There are various enrolment schemes at UB for undergraduate programmes: 1) a National Selection Entrance Test for prospective new students based on their academic and non-academic achievements and/or portfolios (national procedure); 2) a Joint Selection Entrance Test based on the results of a Computer-Based Examination (national procedure); 3) independent admission by UB. Admission for postgraduate programmes is only done through the university's independent admission. Requirements to enter the postgraduate programmes include: a minimum GPA (Grade Point Average) of 2.75 for the Master's programme and minimum GPA of 3.00 for the Doctoral Programme, as well as a TOEFL ITP score of at least 450 or an equivalent of IELTS Band 5.0. Admission of international students is possible and credit transfer procedures are available according to the SER.

It is stated that the national regulation of "Freedom of Learning" (MBKM) was implemented by UB undergraduate programmes which allows students to spend time outside of university, such as in taking courses at other universities or doing an internship, while recognizing the student's achievement. Also, student exchange activities are carried out in many of the named programmes, and it is said that the university will facilitate the mobility accordingly by enabling credit transfer. Recognition of achievements is also done when students excel e.g. in national competitions.

Progression is based on an academic supervisor system: All students of all programs will have academic advisors from the first semester of their study that monitors the student's progression and will be available for consultation.

Upon graduation, the university provides graduate certificates and transcripts to all graduates as well as a diploma supplement containing information related to the intended learning outcomes of the programme and also the students' learning outcome accomplishment.

Experts' evaluation

In the documents provided for the accreditation, the university has clearly provided information on the formal requirements for enrolling as a student. Especially for the Bachelor's programme the admission procedure is based on the national requirements and on university requirements, while for the Master and Doctor programmes the requirements are set by the university. Nonetheless, the experts conclude that relevant information should also be easily accessible for current and prospective students, such as the requirements to become a student in electronic or printed form (**cf. Finding 5**).

The panel of experts concludes that the awarding of a Doctoral degree complies with the applicable regulations. Moreover, UB is already holding the status of a State University with a legal entity. If there is a doctoral research collaboration with parties outside the University, special rules are usually given regarding company's secrets and patents. According to the Doctoral programme's curriculum, students can work on their dissertation in addition to taking classes. While working on the dissertation, eight stages are applied, so that the student's status can be clearly identified.

The University has implemented credit transfers from universities for all levels of education and has notified students accordingly. The principle of applying credit transfers already refers to the regulations that apply to both domestic and foreign students. Specifically, the Bachelor's programme has implemented the Freedom to

Learn Programme (MBKM). Based on the provided documents for this cluster, the panel of experts concludes that the university also facilitates student mobility.

Each graduate (Bachelor, Master and Doctor) is given a diploma and also a diploma supplement. The diploma supplement document describes student data, courses taken, PLO and CLO and other relevant information. Universitas Brawijaya states that the Diploma Supplement follows the model developed by the European Commission, Council of Europe and UNESCO/CEPES.

After careful review of the provided documents, the panel of experts concludes that the conversion from SCU to ECTS is not clear for the programmes in this cluster. The experts recommend that the conversion from SCU to ECTS must be reviewed and adjusted for all programmes (**cf. Finding 14**). If the conversion is not clearly regulated, it leads to a disadvantage for students in international comparison.

Conclusion

The criterion is fulfilled.

5. Teaching staff / Academic level of supervisory staff

Bachelor's/Master's degree

The composition (quantity, qualifications, professional and international experience, etc.) of the staff is appropriate for the achievement of the intended learning outcomes.

Staff involved with teaching is qualified and competent to do so.

Transparent procedures are in place for the recruitment and development of staff.

[ESG 1.5]

Doctoral degree

The composition (quantity, qualifications, professional and international experience, etc.) of the staff is appropriate for the achievement of the intended learning outcomes.

Staff involved with teaching is qualified and competent to do so.

Transparent procedures are in place for the recruitment and development of staff.

[ESG 1.5]

Description

Teaching staff at UB can be recruited as civil servants or on a contract basis. According to the SER each study programme and its respective faculty conduct a job analysis and workload analysis to identify the required number of staff. New openings are transmitted to the central government agency in charge of recruitment of civil servant positions, or directly advertised by the university for contractual staff. According to the SER the teaching staff for master and doctoral degree programs hold a doctoral degree. As for the Bachelor's programme (BFST), the teaching staff with a master's degrees is encouraged to pursue a doctoral study and is provided with scholarship and support. The workload for teaching staff of FAT according to the SER is supposed to be between 12-16 SCU which equals to approximately 7-9 hours per day.

In general, the faculty describes that its staff is supported by providing research grant schemes, publication incentives, workshop for academic or functional position acceleration, and workshop for publications, patents and intellectual property rights. Pedagogical training related to teaching skill is carried out through trainings, that have become a requirement for teaching staffs prior to teaching.

There are 34 lecturers in the Food Science and Technology bachelor programme: 24 assistant professors, 4 associate professors and 6 professors.

There are 25 lecturers in the Agricultural Product Technology master programme: 9 assistant professors, 5 associate professors and 11 professors.

There are 27 lecturers in the Agroindustrial Technology master programme: 13 assistant professors, 10 associate professors and 4 professors.

There are 23 lecturers in the Agricultural Engineering master programme: 12 assistant professors, 8 associate professors and 3 professors.

There are 25 lecturers in the Food Science doctoral programme: 8 assistant professors, 10 associate professors and 7 professors.

There are 21 lecturers in the Agroindustrial Technology doctoral programme: 5 assistant professors, 11 associate professors and 5 professors.

The faculty states that additionally there have been visiting professors also from abroad (e.g. US, Australia, Netherlands) as well as guest lecturers from industry companies (e.g. Mead Johnson Nutrition Asia Pacific, Indolakto, Greenfields). There is also a 3-in-1 Programme through which practitioners are invited to support learning at the university, in the form of either team teaching, joint research, joint publications or transfer of knowledge regarding education management and curriculum.

Experts' evaluation

The number of lecturers assigned to each programme was provided by the university's submitted documents. The experts conclude that the ratio of lecturers and students appears to be suitable. The regulations concerning the qualification of the teaching staff and the Intended Learning Outcomes are clearly defined by Indonesia's government standards.

It was confirmed during the site visit that the university supports the teaching staff in the doctoral programmes with funding and by providing international exchange programmes for post-docs. In the experts' opinion, this leads to an improvement of the programmes and helps the lecturers to proceed in their careers.

UB has provided sufficient documentation with a complete list of lecturers and qualifications that has been presented. Considering that UB is a state university, the availability of lecturers and employees will be guaranteed for the next six years. This guarantees the continuation of the study programmes.

The procedure for the recruitment of teaching staff is in accordance with the applicable regulations and is carried out transparently. Based on the data available to the experts, it is concluded that all lecturers have met the qualifications. Furthermore, UB has presented the concept of staff development both in SER and Strategic Planning. Lecturers are given grants (research and community empowerment), seminar support, various trainings including for pursuing a degree. Supportive staff is also given various trainings to improve their competencies.

Conclusion

The criterion is fulfilled.

6. Learning resources and student support / Support and research environment

Bachelor's/Master's degree

Appropriate facilities and resources are available for learning and teaching activities.

Guidance and support is available for students which includes advice on achieving a successful completion of their studies.

[ESG 1.6]

Doctoral degree

Guidance and support are available for students which include advice on achieving a successful completion of their studies.

Appropriate facilities and resources are available for learning and research activities.

[ESG 1.6]

Description

For each course students receive a Semester Lesson Plan (RPS) detailing the programme learning outcomes, the course learning outcomes, the learning frequency, duration of learning, course types, duration of face-to-face learning, duration of independent study, number of students, prerequisites for attending lectures, course objectives, learning methods, assessment methods, the person in charge of the course. Overall academic regulations are published in the faculty's Educational Guidelines, which are updated yearly.

The Faculty of Agricultural Technology has 42 classrooms and 21 laboratories. All teaching rooms are equipped with air conditioner, speakers and microphones, LCD projectors, projector screens, and seats for students and lecturers. The student capacity in each class is between 40-60 students. Laboratories listed in the SER are for example: "Food Processing Techniques and Agricultural Products Laboratory", "Sensory Test and Applied Food Science Laboratory", "Power and Agricultural Machinery Laboratory", "Food microbiology and agricultural product laboratory". Students also have access to the central facilities of UB, including the Central Library, Institute of BioScience, healthcare facilities, sport centre, religious facilities, Job Placement Center and others. Doctoral students have a dedicated workspace in the faculty building and the postgraduate building.

Orientation programmes aim to introduce students to both the academic and social aspects of university life in UB. The faculty orientation programme consists of the introduction of the Student Executive Board, Student Council Representatives, and invited alumni speakers. The student council representatives promote student activities. There are 16 student activity units available, ranging from academic activities, religion, and sport.

Academic counselling is provided by the students' academic advisors. According to the SER there is an Academic Guidance Book, which states that the counsellor's main tasks are guiding the students in course selection and general counselling. The counselling takes place at the beginning of each semester, at which students need to obtain verification from the academic counsellor on the courses they are taking. For PhD students a supervisor and co-supervisors are assigned for the dissertation process.

UB established the Disability Study and Service Center (DSSC) to accommodate the needs of students with disabilities.

Experts' evaluation

To meet the student's needs, the faculty offers a broad variety of structures supporting the students in their programmes. For instance, the semester lesson plans being used in the different programs help the students to structure their learning along the intended learning outcomes. Also, progression of the students is recorded based on a monitoring system. In the academic context the students have two supervisors for helping them with difficulties. External staff from the field of psychology is available for non-academic support. Also, the students get support for commercializing their ideas through provided special training. Additionally, the graduates reported excellent support of the teaching staff in finding a job through letters of recommendation. During the site visit, PhD students also referred to supporting workshops in academic writing which helped them a lot. In conclusion, the supporting structures at the faculty level as well as at the programmes' level are diverse and helpful for the students.

The material resources of the programs, e.g., workplaces, laboratories, and technical equipment, also meet the students' needs in reference to achieving the intended learning outcomes of the different programmes. Different laboratories and classrooms were observed during the site visit. The panel of experts concludes that the material resources are appropriate at present. The funding of the practical and scientific projects is granted by the supervisor. Based on the feedback provided by the students and teaching staff, the experts conclude that the amount of funding seems to be appropriate. In order to achieve the development of the goals of UB, the university should increase the funding of the laboratories (investment in equipment) and of the supervisors (**Finding 17**). Especially the equipment in the technical centre is very old. Therefore, the panel of experts recommends to equipping the technical centre accordingly for future challenges.

The module descriptions that were provided were of a high standard regarding detailedness and structure. However, it is uncertain if students, especially international students, have access to this kind of information online. The descriptions provided could not be found on the faculty's website. This might be related to the issue that the website is not fully accessible in English. The panel of experts thus recommends that the module descriptions should be available and easily accessible online (**cf. Finding 5**). In case the documents are already available online, the necessary information should be displayed in a way that it is easily accessible on a public website for students and other external stakeholders.

The information about the courses is linked on the website. However, the accessibility and the connection between the information on the curriculum map and the individual courses should be improved for all study programmes in this cluster (**cf. Finding 3**). The panel of experts thinks that this could be achieved, for example, by implementing a study plan that provides all necessary information about the individual courses of the programme.

In the field of computer design and simulation, adequate software is provided. However, the information about the resources in this area are not available for outsiders. As a recommendation, the experts point out that infrastructure and software should be presented in the information about the laboratories on the homepage (**cf. Finding 5**).

One main aspect to achieve the intended learning outcomes of the programmes and to meet the requirements of the labour market is the implementation of internships. For the Bachelor's programmes, internships can be carried out during the participation in the "freedom to learn campus" (MBKM). A detailed description of MBKM was given in the documents provided by the university.

The experts would like to commend that a government policy is in place to provide access for students from low-income families to the university's programmes. Therefore, the accessibility to the programmes for a broad share of the population is provided.

Conclusion

The criterion is fulfilled.

7. Information / Public information

Bachelor's/Master's degree

Impartial and objective, up-to-date information regarding the programme and its qualifications is published regularly. This published information is appropriate for and available to relevant stakeholders.

[ESG 1.8]

Doctoral degree

Impartial and objective, up-to-date information regarding the programme and its qualifications is published regularly. This published information is appropriate for and available to relevant stakeholders.

[ESG 1.8]

Description

The website of UB provides overall information on its study programmes and study conditions as well as services to students. Each study programme has a specific webpage linked to the site of the faculty. This includes information on the study programme profiles, the academic regulations of the faculty, the intended learning outcomes, academic systems, research activities and community service, student organisations, scholarships, job vacancies, quality assurance systems, agendas and contact persons. UB indicates in its SER that information is also provided to prospective students, current students, alumni and the wider community through various social media channels.

Experts' evaluation

The information about the individual programmes is available on the university's homepage. However, for outsiders, the navigation and the accessibility of information should be improved. The members of the expert panel found it difficult to access the relevant information about the scope of the different study programmes. Universitas Brawijaya should include additional information on the website of the study programmes and make it easily accessible, e.g., the study plans or module handbooks (**cf. Finding 5**).

The intended job profiles of the programmes were described in the SER provided. However, the panel of experts recommends that this information should also be stated more precisely on the university's homepage (**cf. Finding 5**). The homepage is the most important source of information for prospective students and the public.

In general, the structure and the format of the homepage provided for each of the study programmes in this cluster varies and contains a lot of text. The panel of experts thus recommends that the overall structure and design of the homepage should be harmonized and rendered more precisely to make navigation regarding the study programme's relevant information for external users easier (**cf. Finding 3**). Especially from the perspective of foreign students it is difficult to find the relevant information on the homepage. In addition, for members of the industry who are searching for information about possible contact persons and possible research cooperations, the information on the website is hard to find.

Conclusion

The criterion is fulfilled.

V. Recommendation of the panel of experts

The panel of experts recommends accrediting the study programmes “Food Science and Technology (B.Sc.)”, “Agricultural Engineering (M.Sc.)”, “Agroindustrial Technology (M.Sc.)”, “Agroindustrial Technology (PhD)”, and “Food Science (PhD)” offered by Universitas Brawijaya.

The panel of experts recommends accrediting the study programme “Agricultural Product Technology (M.Sc.)” offered by Universitas Brawijaya with conditions.

Findings:

1. The published course descriptions / descriptions of the curriculum must specify if a course/module is elective or compulsory as well as the type of examination used to assess the competencies.
2. For the programmes “Food Science and Technology”, “Agricultural Product Technology”, and “Agricultural Engineering”, the visibility of digitalisation in the curriculum should be increased by updating the course descriptions where required. To improve coherence of teaching of digital aspects in the curriculum, the faculty should develop an overall concept on how digitalisation is reflected in the curriculum.
3. The accessibility and the connection between the information on the curriculum map and the individual courses should be improved for all study programmes in this cluster. This also includes the overall structure and design of the study programmes’ information provided on the university’s website. It should be harmonized and rendered more precisely to make navigation for external users easier.
4. For the programme “Master of Agricultural Product Technology”, the denomination of the academic degree awarded in the programme must be adjusted in order to reflect the field of study and acquired competencies.
5. University Brawijaya should improve the availability and accessibility of information provided on its website. Relevant information on the study programmes, such as
 - a. the module descriptions
 - b. course contents,
 - c. the teaching methods
 - d. the organisation of the courses and exams
 - e. requirements for admission
 - f. information about the laboratories and provided infrastructure and software
 should be accessible on the website for students, prospective students, and for outside stakeholders as well. The website should be fully accessible in English.
6. For all programmes, the cooperation with the industry should be strengthened, e.g. in the context of cooperative research or the frequency of moderated meetings between faculty and industry partners.
7. The Master programme “Agroindustrial Technology” should link the students’ research with research conducted by the research centres that is provided by the research and community empowerment institute of UB.
8. The study programme “Agroindustrial Technology” should develop a strategy to attract more prospective students.
9. For the PhD programme “Food Science”, measures should be introduced to ensure that PhD students can successfully finish their publication within the standard period of study.
10. For the PhD programmes, it is strongly recommended that UB should invest in some innovative publication software to improve the quality of the promotion and international competition.
11. PhD candidates should be able to write good and high-quality publications in English. The panel of experts thus recommends that UB should intensify English support for the PhD programmes.

12. To be nationally and internationally competitive, the PhD programmes should consider increasing the required impact factor (to higher than one) of the journals and implementing measures to motivate the candidates to publish their work in a peer reviewed journal.
13. To improve leadership skills, PhD students should be more involved in the teaching process.
14. The conversion of the SCU to ECTS must be adjusted to reflect the actual workload.
15. The support and the guidance of the students should be improved, especially for the writing of the thesis.
16. The experts recommend that the PhD handbooks should be presented in a way that structures the provided information visually cohesive and clear.
17. To achieve the development of the goals of UB, the university should increase the funding of the laboratories (investment in equipment) and of the supervisors.
18. The overall structure and design of the study programmes' information provided on the university's website should be harmonized and rendered more precisely to make navigation for external users easier.